

REMARKS

The first Office Action mailed on June 17, 2002 has been carefully considered and the Examiner's remarks are appreciated. New claims 23-32 have been added. The foregoing amendments are responsive to that Office Action, with support for the amendments and new claims found in the Specification, Claims, and Drawings. Claims 1-22 are pending in this application. And claims 1-22 and new claims 23-32 are presented for examination.

Brief Discussion of the Invention

The present invention is an electrical connector which is formed from a sheet of electrically conductive material that lies inbetween two layers of nonconducting material forming the casing of an electrical chip. The connector is electrically connected to an electrical element embedded within the chip. An opening in the sheet is concentrically aligned with a pair of larger holes respectively bored through the nonconducting layers. The opening is also smaller than the diameter of an electrically conductive contact pin. However, the sheet is comprised of a flexible material so that the opening adapts to the diameter of the pin when the pin is inserted therethrough. The periphery of the opening applies force to the sides of the pin when the pin is inserted, and thus holds the pin within the opening and in contact with the sheet, by friction. The pin can be withdrawn from the connector by applying sufficient axial force.

Brief Discussion of U.S. Pat. No. 6,054,756 to DiStefano

U.S. Pat. No. 6,054,756 to DiStefano discloses a semiconductor connection component for electrically connecting a semiconductor chip to a support substrate. In particular, the

embodiment of Figure 9 (cited by the Examiner) discloses a support structure 230 having a top layer 232, a dielectric bottom layer 234, and holes 240 extending transversely through the support structure 230. Associated with each hole is an elongated laterally-extending lead 252 having three serially-connected sections: (a) two securement sections 266 and 270 sandwiched between the top layer 232 and the bottom layer 234, and (b) a connection section 256 extending across the associated hole and connecting the two securement sections 266 and 270. One of the securement sections 266 is directly connected to the connection section 256 and extends to a terminal 248. The other securement section 270 is connected to the connection section 256 by means of a thin frangible section 272. The semiconductor connection component of DiStefano is used in conjunction with a semiconductor chip (shown in Figure 5) having contacts (e.g. 88 in Figure 5) aligned with a corresponding one of the holes of the connection component. A bonding tool is then used to break the frangible section 272, bend the now-broken end of the connection section 256 towards a corresponding contact to engage the contact, and bond the broken end of the connection section 256 to the contact using heat or ultrasonic vibration. The bond establishes electrical connection between the terminal and the contact.

Discussion of the Office Action

In the first Office Action of June 17, 2002, the Examiner objected to the specification due to the informalities identified by the Examiner on page 5, paragraph 20, lines 5 and 6. The Examiner also rejected claims 1 and 15 under 35 U.S.C. §112, and he rejected claims 1-22 under 35 U.S.C. §103(a).

Discussion of the Objection to the Specification

The Examiner's suggestion has been adopted with regard to the labeling of the term "pin." Thus, the originally labeled pin #27 has now been corrected to pin #35. In view of such amendment, the issue is believed moot.

Discussion of the Rejection of Claims 1 and 15 under 35 U.S.C. §112

As set forth above, claims 1 and 15 were rejected under 35 U.S.C. §112 as having insufficient antecedent basis for "*the chip and a conductive contact pin being claimed as part of the structure of the connector in the claim.*" Applicant has since amended the preambles of claims 1 and 15, to now claim a "*connector chip*" instead of just a "*connector,*" such that both a connecting element and a support structure of the connecting element (including the top and bottom layers) are now parts of the structure of the connector chip. This revision addresses the Examiner's question of whether the connector is part of and directly attached to the chip, or whether the connector is a transition device which is only electrically connected to the chip (a via). In regards to the conductive contact pin, it is believed that the Examiner has erred in his statement that the conductive contact pin was originally claimed as part of the structure of the connector in the claim. The conductive contact pin is used as a limitation for other structural elements of the invention (e.g. "means for holding the pin in contact with the sheet"), and not as a claim element itself. Notwithstanding the Examiner's error, it is believed that the revised preambles in claims 1 and 15 clarify the role of the conductive contact pin as merely the object/article with which the present invention is configured to interact. Accordingly, the 35 USC §112 rejections should be withdrawn.

It is notable that the aforementioned change from “connector” to “connector chip” has been made in claims 1 and 15 for a purpose of avoiding substantial revisions in the dependent claims (e.g. dependent claims 2-14 for claim 1, and dependent claims 16-22 for claim 150) which call for and further limit features of the “chip” structure. Therefore, and notwithstanding the amendment to claims 1 and 15, new independent claim 23, along with new dependent claims 24-32, have been added to claim a “connector” alone, having limitations directed to the connector’s structure, rather than the support structure of the chip. Thus, and in the alternative, it is also believed that new claim 23 also complies with §112 by particularly pointing out a “connector” as the claimed invention, and distinctly claiming features specific to the connector, and not the support structure thereof.

Discussion of the Rejection of Claims 1-22 under 35 U.S.C. §103(a)

Claims 1-22 were rejected under 35 U.S.C. §103(a) as being obvious over U.S. Pat. No. 6,054,756 to DiStefano et al.

Referring to independent claims 1 and 15, the Examiner stated that DiStefano shows in Figure 9, among other features, “a passageway including means for holding the pin, (not shown Col. 15 Lines 28-31), in contact with the sheet (#256), and for restraining the pin, (not shown Col. 15 Lines 28-31), from translating with respect to the chip” (emphasis added). And for independent claim 18, the Examiner also cites column 15, lines 25-37 after reciting the claim language “mechanically holding the pin in a passageway in the chip” (emphasis added). Column 15, lines 25-37, however, reads in part,

“These connection component is disposed on the chip front surface so that each contact on the chip is aligned with one hole and crudely aligned with the connection section 256 of one lead. A bonding tool as discussed above is advanced into each hole so as to

engage the connection section of the associated lead. Once again, the bonding tool is aligned with the contacts on the chip. Engagement of the bonding tool with the connection section serves to bring the connection section into precise alignment with the contact.”

Nowhere in the paragraph cited by the Examiner is any feature describing, suggesting, or relating to either a means or process for holding the pin or restraining the pin, and it is unclear how this text supports the Examiner’s conclusion that such elements are disclosed by DiStefano.

In regards to claims 1, 15 and 18, it is also respectfully submitted that the Examiner erred in his reading the DiStefano reference generally, resulting in his determination that the “*means for holding the pin... and for restraining the pin*” and the step of “*mechanically holding the pin*” of the present invention is disclosed by DiStefano. As can be seen in Figure 9, the “lead” 252 is a horizontally-oriented strip of conductive material generally positioned between a top layer 232 and a bottom layer 234, with only the connection section 256 of the lead 252 exposed within the hole 240. While the connection section 256 is initially secured at either end on opposite sides of the hole 240, one end of the connection section 256 is designed and configured to be broken off at a frangible section 272, bent downward to abut a contact (e.g. 88 in Figure 5) of a chip module, and bonded to the contact 88. While the Examiner asserts that the broken end of the connection section 256 and its apposing conductive sheet 270 operate together to hold a pin therebetween, analogous to the “means for holding the pin” of the present invention, the connection section 256 and the apposing conductive sheet 270 in fact perform no such function. Once detached from each other, there is no further interaction between the connection section 256 and the apposing conductive sheet 270 to perform any manner of cooperative effort. Therefore, it is believed that the 103 based rejections of claims 1, 15, and 18 are inappropriate in view of MPEP Sec 2143.03 as follows in part:

“To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.”

Furthermore, and notwithstanding the Examiner’s misreading of DiStefano for the alleged disclosed elements and features discussed above, it is respectfully submitted that the Examiner also erred in his conclusion for claims 1, 15, and 18-21 that, although a “pin” is not disclosed in DiStefano, it would have been obvious to one skilled in the art to use the teachings of the “lead” in DiStefano to understand it can be used as a “pin” as described in the claims of the present invention. It is believed, however, that adoption of the Examiner’s conclusion would produce a contradictory and paradoxical result. As described above, the lead 252 of DiStefano includes the connection section 256 which the Examiner asserts may be used in performing a “holding of the pin” function of the present invention. However, if the lead can also be used as a pin, such use would require the connection section 256 to hold itself and thereby establish an electrical connection with itself, and resulting in the paradox. As discussed above, the “pin” used in claims 1, 15 and 18-21, is not a structural part of the claimed invention. Rather it is the object/article upon which the invention is configured to interact, analogous to the contact 88 in Figure 5 of DiStefano. Accordingly, the 35 U.S.C. §103(a) rejections should be withdrawn.

In view of the amendments to independent Claims 1, 15 and 18, Applicant respectfully submits that dependent claims 2-14, claims 16 and 17, and claims 19-22 are also now in condition for allowance as being dependent on now allowable claims 1, 15 and 18, respectively. In particular, it is believed that the 103 based rejections of claims 2-14, 16 and 17, and 19-22 are now inappropriate in view of MPEP Sec 2143.03. Notwithstanding the arguments presented, however, claims 2-14, 16 and 17 have been amended to properly reflect the corresponding changes in independent claims 1 and 15, such as from “connector” to “connector chip.”

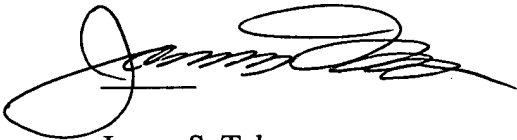
Summary

Having amended the claims, as discussed above, Applicant respectfully submits that Claims 1-22 and new claims 23-32 are in condition for allowance.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version With Markings to Show Changes Made."

In the event that the Examiner finds any remaining impediment to the prompt allowance of these claims that could be clarified with a telephone conference, he is respectfully requested to initiate the same with the undersigned at (925) 422-7274.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "James S. Tak", with a large, stylized loop at the beginning and end.

James S. Tak

Attorney for Applicant

Dated: 9-4-02 Registration No. 46,367